

Use Attainability Analysis

for

WBID 1445 Little Pomme de Terre River

Submitted by
SES, Inc.

To
Missouri Department of Natural Resources
Water Protection Program

Date Received: October 26, 2007

Field Data Sheets for Recreation Use Stream Surveys

Data Sheet A - Water Body Identification

I. Water Body Information (For water body being surveyed)

Water Body Name (from USGS 7.5' quad): Little Pomme De Terre River	
Missouri Water Body Identification (WBID) Number: 1445	
8 digit HUC code: 10290107	County: Polk, Greene
Upstream Legal Description (from Table H): T31N R21W 25	
Downstream Legal Description (from Table H): T31N R21W 3	
Number of sites evaluated: 4	
List all site numbers, listed consequently upstream to downstream: 1,2,3,4	

Site Locations Map(s): Attach a map of the entire segment with assessment sites clearly labeled.
Mark any other items that may be of interest.

II. Facility Information (list all permitted discharges to the water body segment)

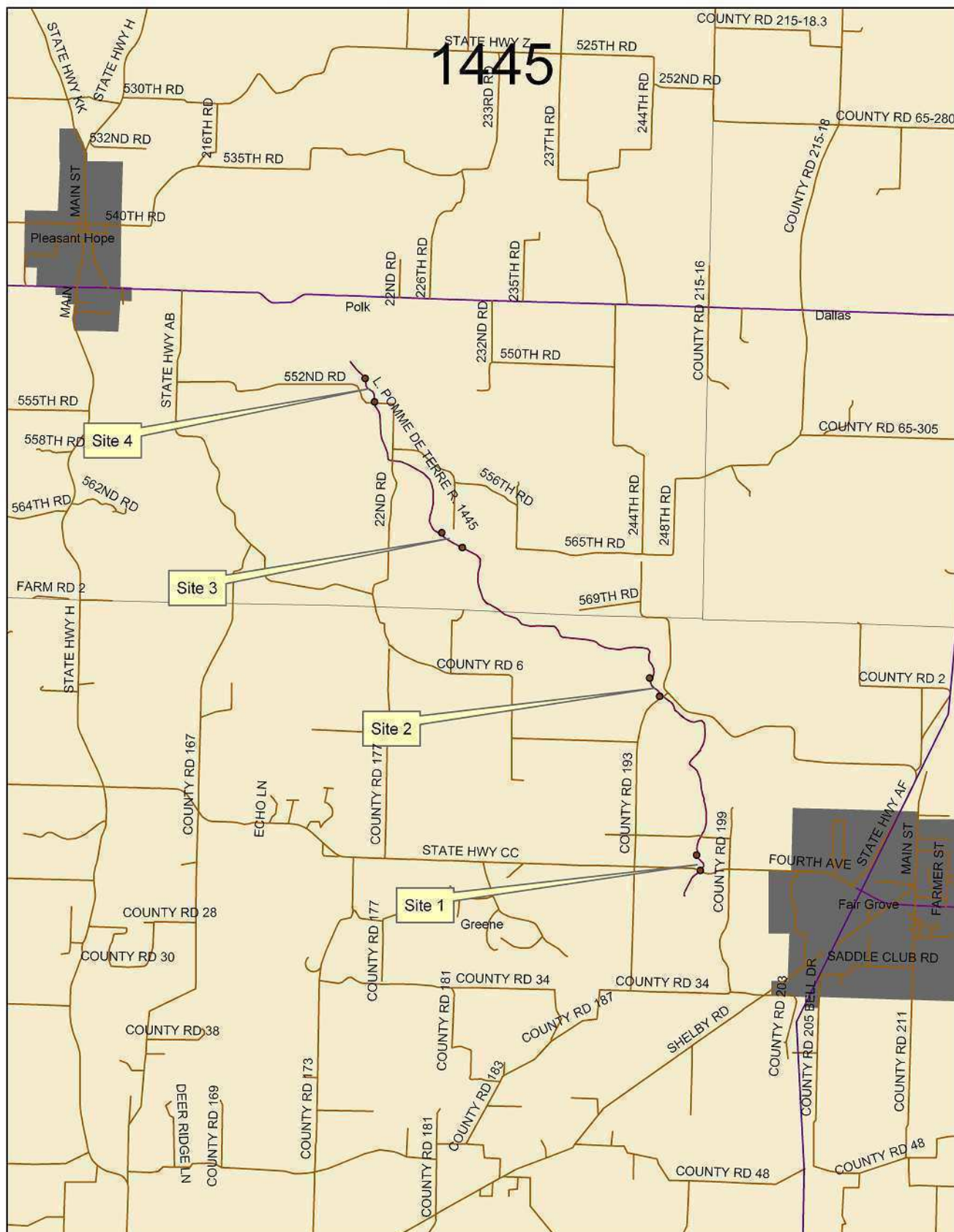
Facility Name(s) and Permit Number(s): Acres of Shade MHP MO 0107646
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III. UAA Surveyor (please print legibly)

Name of Surveyor: Aaron Ball	Telephone Number: (913)307-0046
Organization/Employer: SES, Inc.	

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Signed: Aaron Ball **Date:** 10/23/2007



WBID # 1445
 Site # 1

Field Data Sheets For Recreational Use Stream Surveys

Data Sheet B-Site Characterization

Date & Time:	10/12/07	7:34	Site Location Description (e.g. road crossing):
Personnel:	Aaron Ball, Drew Dodson		St. Hwy CC
Current Weather Conditions:	clear	Facility Name:	Acres of Shade MHP
Weather conditions for the past 10 days:	0.47 inches	Permit Number:	MO 0107646
Drought conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>			

Site Location:

Location Coordinates (Universal Transverse Mercator Projection, In Meters)					
Site 01	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0483826	4137928		7.5	
Site 11	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0483777	4138125		5.7	

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
86	Upstream	87	Downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed:

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water Skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe:				

WBID # 1445
 Site # 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B- Site Characterization (Continued)

Surrounding Conditions:

<input type="checkbox"/> City/County parks	<input type="checkbox"/> playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National Forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkways
<input type="checkbox"/> Boating accesses	<input checked="" type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep Slopes	<input type="checkbox"/> Other:
Comments:				

Evidence of Human Use:

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot path/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV/ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock watering
comments/other: none				

Substrate:

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
50	30				20

Aquatic Vegetation:

Rooted aquatic vegetation in shallow areas.

Water Characteristics:

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

WBID # 1445
Site # 1

Field Data Sheets for Recreational Use Stream Survey:

Data Sheet B - Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

none

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Aaron Ball Date of Survey: 10/12/2007

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>1445</u> Site #: <u>1</u> L.Pomme de Terre River Estimated Channel Incision: <u>3.0</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>0483826</u> UTM Y: <u>4137928</u> +/- <u>7.5</u> (meters) 11 UTM X: <u>0483777</u> UTM Y: <u>4138125</u> +/- <u>5.7</u> (meters) Average Stream Width: <u>6</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Aaron Ball, Drew Dodson</u>	Dissolved Oxygen Date: <u>10/12/07</u> Time: <u>7:35</u> Dissolved Oxygen: <u>8.2</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: <u>12</u> (°C)
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Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.2	0.05	0.9	0.05	1.0	0.15	0.2	0.05	0.5	0.20	0.8	0.10	0.2	0.05	1.0	0.15	0.4	0.10	1.2	0.15	0.6	0.15
2	0.4	0.05	1.8	0.05	2.0	0.20	0.4	0.05	1.0	0.35	1.6	0.40	0.4	0.05	2.0	0.20	0.8	0.10	2.4	0.00	1.2	0.25
3	0.6	0.05	2.7	0.00	3.0	0.30	0.6	0.05	1.5	0.40	2.4	0.45	0.6	0.05	3.0	0.15	1.2	0.15	3.6	0.15	1.8	0.30
4	0.8	0.05	3.6	0.00	4.0	0.25	0.8	0.10	2.0	0.40	3.2	0.60	0.8	0.05	4.0	0.20	1.6	0.10	4.8	0.30	2.4	0.35
5	1.0	0.05	4.5	0.10	5.0	0.30	1.0	0.10	2.5	0.50	4.0	0.70	1.0	0.10	5.0	0.30	2	0.10	6.0	0.20	3.0	0.35
6	1.2	0.05	5.4	0.20	6.0	0.25	1.2	0.10	3.0	0.30	4.8	0.60	1.2	0.10	6.0	0.20	2.4	0.10	7.2	0.00	3.6	0.25
7	1.4	0.05	6.3	0.25	7.0	0.30	1.4	0.05	3.5	0.30	5.6	0.55	1.4	0.05	7.0	0.30	2.8	0.05	8.4	0.20	4.2	0.20
8	1.6	0.05	7.2	0.15	8.0	0.30	1.6	0.00	4.0	0.25	6.4	0.50	1.6	0.05	8.0	0.30	3.2	0.05	9.6	0.25	4.8	0.15
9	1.8	0.05	8.1	0.15	9.0	0.30	1.8	0.05	4.5	0.10	7.2	0.40	1.8	0.05	9.0	0.20	3.6	0.05	10.8	0.25	5.4	0.10
Right Bank	2.0	0.00	9.0	0.00	10.0	0.00	2.0	0.00	5.0	0.00	8.0	0.00	2.0	0.00	10.0	0.00	4	0.00	12.0	0.00	6.0	0.00
Feature Type (riffle, run, or pool)	pool		pool		pool		pool		pool		pool		pool		pool		pool		pool		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

0.70 MAXIMUM

0.15 MEDIAN

Signed: Aaron Ball Date: 10/12/07

WBID # 1445
 Site # 2

Field Data Sheets For Recreational Use Stream Surveys

Data Sheet B-Site Characterization

Date & Time:	10/12/07	8:05	Site Location Description (e.g. road crossing):
Personnel:	Aaron Ball, Drew Dodson		CR 193
Current Weather Conditions:	clear	Facility Name:	Acres of Shade MHP
Weather conditions for the past 10 days:	0.47 inches	Permit Number:	MO 0107646
Drought conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>			

Site Location:

Location Coordinates (Universal Transverse Mercator Projection, In Meters)					
Site 01	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0483301	4140178		7.2	
Site 11	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0483170	4140413		7.5	

Photos:

Photo ID#	Photo Purpose	Photo ID#:	Photo Purpose	Photo ID#:	Photo Purpose
88	Upstream	89	Downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed:

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water Skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe:				

WBID # 1445
 Site # 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B- Site Characterization (Continued)

Surrounding Conditions:

<input type="checkbox"/> City/County parks	<input type="checkbox"/> playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input checked="" type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National Forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkways
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep Slopes	<input type="checkbox"/> Other:
Comments:				

Evidence of Human Use:

<input type="checkbox"/> Roads	<input type="checkbox"/> Foot path/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV/ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input checked="" type="checkbox"/> Livestock watering
comments/other:				

Substrate:

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
30	50				20

Aquatic Vegetation:

Less than 2% minor algae

Water Characteristics:

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

WBID # 1445
Site # 2

Field Data Sheets for Recreational Use Stream Survey:

Data Sheet B - Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

none

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Aaron Ball Date of Survey: 10/12/2007

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>1445</u> Site #: <u>2</u> Estimated Channel Incision: <u>3.0</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>0483301</u> UTM Y: <u>4140178</u> +/- <u>7.2</u> (meters) 11 UTM X: <u>0483170</u> UTM Y: <u>4140413</u> +/- <u>7.5</u> (meters) Average Stream Width: <u>6</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Aaron Ball, Drew Dodson</u>	Dissolved Oxygen Date: <u>10/12/07</u> Time: <u>8:07</u> Dissolved Oxygen: <u>8.1</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: <u>11.7</u> (°C)
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Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.5	0.05	0.5	0.05	0.5	0.10	1.1	0.25	0.7	0.15	0.8	0.15	0.7	0.10	0.7	0.10	0.7	0.10	0.6	0.25	0.6	0.20
2	1.0	0.05	1.0	0.15	1.0	0.30	2.2	0.25	1.4	0.50	1.6	0.20	1.4	0.20	1.4	0.30	1.4	0.20	1.2	0.45	1.2	0.40
3	1.5	0.05	1.5	0.10	1.5	0.40	3.3	0.30	2.1	0.70	2.4	0.10	2.1	0.20	2.1	0.20	2.1	0.10	1.8	0.45	1.8	0.60
4	2.0	0.05	2.0	0.10	2.0	0.50	4.4	0.30	2.8	0.60	3.2	0.10	2.8	0.30	2.8	0.30	2.8	0.20	2.4	0.50	2.4	0.70
5	2.5	0.05	2.5	0.00	2.5	0.50	5.5	0.40	3.5	0.60	4.0	0.20	3.5	0.30	3.5	0.25	3.5	0.20	3.0	0.45	3.0	0.60
6	3.0	0.10	3.0	0.00	3.0	0.40	6.6	0.50	4.2	0.60	4.8	0.20	4.2	0.20	4.2	0.30	4.2	0.40	3.6	0.40	3.6	0.70
7	3.5	0.10	3.5	0.05	3.5	0.30	7.7	0.50	4.9	0.60	5.6	0.25	4.9	0.20	4.9	0.30	4.9	0.40	4.2	0.40	4.2	0.65
8	4.0	0.10	4.0	0.05	4.0	0.25	8.8	0.50	5.6	0.60	6.4	0.50	5.6	0.20	5.6	0.20	5.6	0.40	4.8	0.40	4.8	0.60
9	4.5	0.05	4.5	0.05	4.5	0.20	9.9	0.50	6.3	0.35	7.2	0.40	6.3	0.15	6.3	0.15	6.3	0.30	5.4	0.40	5.4	0.55
Right Bank	5.0	0.00	5.0	0.00	5.0	0.00	11.0	0.00	7.0	0.00	8.0	0.00	7.0	0.00	7.0	0.00	7.0	0.00	6.0	0.00	6.0	0.00
Feature Type (riffle, run, or pool)	pool		pool		pool		pool		pool		pool		pool		pool		pool		pool		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

0.70 MAXIMUM

0.25 MEDIAN

Signed: Aaron Ball Date: 10/12/07

WBID # 1445
 Site # 3

Field Data Sheets For Recreational Use Stream Surveys

Data Sheet B-Site Characterization

Date & Time:	10/12/07	8:51	Site Location Description (e.g. road crossing):
Personnel:	Aaron Ball, Drew Dodson		Farmer Access off 552nd Rd.
Current Weather Conditions:	clear	Facility Name:	Acres of Shade MHP
Weather conditions for the past 10 days:	0.47 inches	Permit Number:	MO 0107646
Drought conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>			

Site Location:

Location Coordinates (Universal Transverse Mercator Projection, In Meters)					
Site 01	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0480748	4142101		5.7	
Site 11	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:	Meters	
	0480479	4142291		5.7	

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
90	Downstream	91	Upstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed:

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water Skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe:				

WBID # 1445
 Site # 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B- Site Characterization (Continued)

Surrounding Conditions:

<input type="checkbox"/> City/County parks	<input type="checkbox"/> playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input checked="" type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National Forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkways
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep Slopes	<input type="checkbox"/> Other:
Comments:				

Evidence of Human Use:

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot path/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV/ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input checked="" type="checkbox"/> Livestock watering
comments/other:				

Substrate:

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
30	20				50

Aquatic Vegetation:

Rooted aquatic vegetation in shallow areas
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Water Characteristics:

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

WBID # 1445
Site # 3

Field Data Sheets for Recreational Use Stream Survey:

Data Sheet B - Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

none

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Aaron Ball Date of Survey: 10/12/2007

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>1445</u> Site #: <u>3</u> Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>0480748</u> UTM Y: <u>4142101</u> +/- <u>5.7</u> (meters) 11 UTM X: <u>0480479</u> UTM Y: <u>4142291</u> +/- <u>5.7</u> (meters) Average Stream Width: <u>7</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Aaron Ball, Drew Dodson</u>	Dissolved Oxygen Date: <u>10/12/07</u> Time: <u>8:50</u> Dissolved Oxygen: <u>6.6</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: <u>13.3</u> (°C)
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Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.6	0.20	1.1	0.25	0.9	0.10	0.9	0.10	0.6	0.25	0.6	0.35	0.8	0.30	0.8	0.15	0.8	0.20	1.0	0.20	0.8	0.30
2	1.2	0.15	2.2	0.40	1.8	0.20	1.8	0.30	1.2	0.40	1.2	0.30	1.6	0.40	1.6	0.25	1.6	0.40	2.0	0.25	1.6	0.40
3	1.8	0.30	3.3	0.45	2.7	0.20	2.7	0.40	1.8	0.30	1.8	0.20	2.4	0.55	2.4	0.30	2.4	0.40	3.0	0.35	2.4	0.40
4	2.4	0.30	4.4	0.50	3.6	0.15	3.6	0.40	2.4	0.40	2.4	0.55	3.2	0.50	3.2	0.40	3.2	0.30	4.0	0.40	3.2	0.45
5	3.0	0.30	5.5	0.50	4.5	0.20	4.5	0.40	3.0	0.50	3.0	0.50	4.0	0.70	4.0	0.40	4	0.30	5.0	0.50	4.0	0.40
6	3.6	0.20	6.6	0.50	5.4	0.20	5.4	0.50	3.6	0.40	3.6	0.60	4.8	0.70	4.8	0.45	4.8	0.30	6.0	0.45	4.8	0.30
7	4.2	0.20	7.7	0.40	6.3	0.25	6.3	0.50	4.2	0.40	4.2	0.40	5.6	0.60	5.6	0.50	5.6	0.30	7.0	0.20	5.6	0.30
8	4.8	0.10	8.8	0.20	7.2	0.20	7.2	0.40	4.8	0.30	4.8	0.40	6.4	0.30	6.4	0.40	6.4	0.30	8.0	0.20	6.4	0.20
9	5.4	0.10	9.9	0.15	8.1	0.20	8.1	0.30	5.4	0.20	5.4	0.20	7.2	0.20	7.2	0.40	7.2	0.25	9.0	0.20	7.2	0.30
Right Bank	6.0	0.00	11.0	0.00	9.0	0.00	9.0	0.00	6.0	0.00	6.0	0.00	8.0	0.00	8.0	0.00	8	0.00	10.0	0.00	8.0	0.00
Feature Type (riffle, run, or pool)	pool		pool		pool		pool		pool		pool		pool		pool		pool		pool		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

GPS locations corresponds to Transect 01 and 11. Transects ordered in upstream to downstream order.

Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)

All measurements to be taken to the nearest 0.01 meter.

0.70 MAXIMUM

0.30 MEDIAN

Signed: Aaron Ball Date: 10/12/07

WBID # 1445
 Site # 4

Field Data Sheets For Recreational Use Stream Surveys

Data Sheet B-Site Characterization

Date & Time:	10/12/07	9:20	Site Location Description (e.g. road crossing):
Personnel:	Aaron Ball, Drew Dodson		
Current Weather Conditions:	clear	Facility Name:	Acres of Shade MHP
Weather conditions for the past 10 days:	0.47 inches	Permit Number:	MO 0107646
Drought conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>			

Site Location:

Location Coordinates (Universal Transverse Mercator Projection, In Meters)					
Site 01	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:		Meters
	0479611	4143984			7.8
Site 11	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy:		Meters
	0479491	4144287			4.5

Photos:

Photo ID#	Photo Purpose	Photo ID#:	Photo Purpose	Photo ID#:	Photo Purpose
92	Upstream	93	Downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed:

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water Skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe:				

WBID # 1445
Site # 4

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B- Site Characterization (Continued)

Surrounding Conditions:

<input type="checkbox"/> City/County parks	<input type="checkbox"/> playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Rural Residential
<input type="checkbox"/> Campgrounds	<input type="checkbox"/> State parks	<input type="checkbox"/> National Forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkways
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> Fence	<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Steep Slopes	<input type="checkbox"/> Other:
Comments: none				

Evidence of Human Use:

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot path/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Rope swings
<input type="checkbox"/> RV/ATV Tracks	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Livestock watering
comments/other:				

Substrate:

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
20	70				10

Aquatic Vegetation:

none

Water Characteristics:

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

WBID # 1445
Site # 4

Field Data Sheets for Recreational Use Stream Survey:

Data Sheet B - Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

none

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Aaron Ball Date of Survey: 10/12/2007

Organization: SES, Inc. Position: Field Team Leader

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet C - Field Survey Results

Waterbody ID: <u>1445</u> Site #: <u>4</u> Estimated Channel Incision: <u>2.0</u> (m) (height between low bank width and water) GPS Location - Easting (UTM X), Northing (UTM Y), Horizontal Accuracy Estimate (EPE / PDOP / FOM) 01 UTM X: <u>0479611</u> UTM Y: <u>4143984</u> +/- <u>7.8</u> (meters) 11 UTM X: <u>0479491</u> UTM Y: <u>4144287</u> +/- <u>4.5</u> (meters) Average Stream Width: <u>6</u> (meters) Length of Survey Segment: <u>150</u> (meters) (To determine Length of Reach) (20x average stream width) Field Staff: <u>Aaron Ball, Drew Dodson</u>														Dissolved Oxygen								
														Date: _____ Time: _____ D.O. meter Dissolved Oxygen: <u>not working</u> (mg/L) Dissolved Oxygen: _____ (% sat) Specific Cond: _____ (µS/cm) Water Temperature: _____ (°C)								
Transect Cross-Section																						
01		02		03		04		05		06		07		08		09		10		11		
Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.5	0.10	0.8	0.05	0.3	0.05	0.3	0.05	0.8	0.20	0.7	0.30	0.4	0.05	0.6	0.15	0.7	0.05	0.3	0.10	0.8	0.40
2	1.0	0.20	1.6	0.00	0.6	0.10	0.6	0.05	1.6	0.30	1.4	0.30	0.8	0.20	1.2	0.30	1.4	0.20	0.6	0.15	1.6	0.40
3	1.5	0.30	2.4	0.00	0.9	0.10	0.9	0.05	2.4	0.35	2.1	0.10	1.2	0.40	1.8	0.40	2.1	0.30	0.9	0.30	2.4	0.55
4	2.0	0.30	3.2	0.05	1.2	0.15	1.2	0.05	3.2	0.50	2.8	0.00	1.6	0.40	2.4	0.50	2.8	0.25	1.2	0.30	3.2	0.60
5	2.5	0.30	4.0	0.05	1.5	0.10	1.5	0.10	4.0	0.60	3.5	0.10	2.0	0.40	3.0	0.50	3.5	0.30	1.5	0.30	4.0	0.40
6	3.0	0.30	4.8	0.05	1.8	0.05	1.8	0.10	4.8	0.60	4.2	0.20	2.4	0.40	3.6	0.50	4.2	0.30	1.8	0.20	4.8	0.30
7	3.5	0.25	5.6	0.05	2.1	0.10	2.1	0.10	5.6	0.60	4.9	0.20	2.8	0.40	4.2	0.60	4.9	0.50	2.1	0.20	5.6	0.25
8	4.0	0.20	6.4	0.10	2.4	0.10	2.4	0.05	6.4	1.00	5.6	0.15	3.2	0.30	4.8	0.60	5.6	0.60	2.4	0.10	6.4	0.10
9	4.5	0.20	7.2	0.05	2.7	0.05	2.7	0.05	7.2	1.00	6.3	0.10	3.6	0.15	5.4	0.50	6.3	0.35	2.7	0.05	7.2	0.05
Right Bank	5.0	0.00	8.0	0.00	3.0	0.00	3.0	0.00	8.0	0.00	7.0	0.00	4.0	0.00	6.0	0.00	7	0.00	3.0	0.00	8.0	0.00
Feature Type	pool		pool		pool		riffle		pool		pool		pool		pool		pool		pool		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width

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Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)

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All measurements to be taken to the nearest 0.01 meter.

1.00 MAXIMUM

0.20 MEDIAN

Signed: Aaron Ball Date: 10/12/07

WBID# 1445



Site# 1 Photo ID# 86, Upstream



Site# 1 Photo ID# 87, Downstream



Site# 2 Photo ID# 88, Upstream



Site# 2 Photo ID# 89, Downstream

WBID# 1445



Site# 3 Photo ID# 90, Downstream



Site# 3 Photo ID# 91, Upstream



Site# 4 Photo ID# 92, Upstream



Site# 4 Photo ID# 93, Downstream